

CLAIMS

What is claimed is:

1. A filling system comprising:

5 a fuel supply having at least a first valve connector arranged to supply fuel to a fuel chamber having at least a second valve connector, wherein the fuel chamber supplies fuel to a fuel cell that powers an electronic device, wherein the first valve connector is connectable to the second valve connector so that the fuel supply refills the fuel chamber, and wherein when the valve connectors are not connected to each other the first valve connector provides a seal for the fuel supply and the second valve connector provides a seal for the fuel chamber.

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2. The filling system of claim 1, wherein the fuel chamber comprises a fuel cartridge supplying fuel to the fuel cell.

15 3. The filling system of claim 2, wherein said fuel cartridge is located internal to the electronic device.

4. The filling system of claim 3, wherein said fuel cartridge is removable from the electronic device.

20 5. The filling system of claim 1, wherein the fuel supply comprises a stand-alone fuel container.

6. The filling system of claim 1, wherein the fuel supply comprises a second fuel chamber adapted to supply fuel to a second fuel cell disposed in a second electronic device.

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7. The filling system of claim 6, wherein the second fuel chamber comprises a fuel cartridge.

30 8. The filling system of claim 6, wherein the second fuel chamber comprises a removable fuel cartridge.

9. The filling system of claim 1, wherein the first valve connector comprises a first component of a two-part valve and the second valve connector comprises a second component of the two-part valve component.

5 10. The filling system of claim 1, wherein at least one of the valve connectors is retractable.

11. The filling system of claim 1, wherein filling system further comprises a manifold, wherein the manifold comprises an input connectable to the first valve connector and a plurality of outputs, wherein at least one of the outputs is connectable to the second valve
10 connector.

12. The filling system of claim 11, wherein the manifold further comprises at least one valve to control the flow of fuel from the input to the plurality of outputs.

15 13. An adapter for connecting a first fuel supply to a second fuel supply comprising:
an input connector to connect the adapter to the first fuel supply; and
an output connector to connect the adapter to the second fuel supply; and wherein the adapter is arranged to transfer fuel from the first fuel supply to the second fuel supply.

20 14. The adapter of claim 13, wherein the adapter further comprises a pump.

15. The adapter of claim 14, wherein the pump is a manual pump.

16. The adapter of claim 14, wherein the pump is an electric pump.
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17. The adapter of claim 16, wherein the adapter further comprises a power source to supply power to the electric pump.

18. The adapter of claim 17, wherein the power source comprises a battery.
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19. The adapter of claim 17, wherein the power source comprises a solar panel.

20. The adapter of claim 17, wherein the power source comprises a fuel cell.

21. The adapter of claim 13, wherein a power source disposed in at least one of the fuel
5 supplies and is adapted to supply power to an electric pump disposed in the adapter and adapted to transfer fuel from the first fuel supply to the second fuel supply.

22. The adapter of claim 21, wherein said at least one of the fuel supplies comprises a first
10 set of electrical connectors and the adapter contains a second set of electrical connectors in contact with the first set of electrical connectors to supply power from the power source to the adapter.

23. The adapter of claim 17, wherein the adapter further comprises an electrical switch in
15 communication with the pump.

24. The adapter of claim 13 further comprising at least one valve arranged to selectively
stop the flow of fuel from the first fuel supply to the second fuel supply.

25. The adapter of claim 13, wherein the first fuel supply comprises a first half of a two-
20 component valve and the input connector comprises a second half of the two-component valve.

26. The adapter of claim 13, wherein the second fuel supply is disposed in an electronic
device and the adapter transfers fuel to the second fuel supply *in-situ*.

25 27. The adapter of claim 26, wherein the electronic device comprises a retractable valve connector connectable to the output connector on the adapter.

28. The adapter of claim 13, wherein one of the fuel supplies comprises a system for
30 monitoring the amount of fuel contained therein and the adapter is in communication with the fuel monitoring system.

29. The adapter of claim 28, wherein said one of the fuel supplies comprises a first set of electrical connectors in contact with the fuel monitoring system and the adapter contains a second set of electrical connectors in contact with the first set of electrical connectors to receive information from the fuel monitoring system.

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30. The adapter of claim 13 further comprises a display.

31. The adapter of claim 30, wherein the display comprises a light emitting diode or a liquid crystal display.

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32. The adapter of claim 13, wherein the adapter comprises a logic control unit controlling the operation of the adapter.

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33. The adapter of claim 13, wherein the adapter further comprises a system to monitor a level of fuel within the second fuel supply and the monitoring system stops the flow of fuel from the first fuel supply when the level in the second fuel supply reaches a predetermined level.

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34. The adapter of claim 33, wherein the second fuel supply comprises a fuel gauge to measure the amount of fuel in the second fuel supply and the monitoring system is in communication with the fuel gauge.

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35. The adapter of claim 33, wherein the monitoring system comprises a logic control unit to control operation of the adapter.

36. The adapter of claim 33, wherein the predetermined value is less than about 85% to about 95% of fuel chamber capacity.

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37. A method for *in-situ* filling a fuel chamber disposed within an electronic device that contains a fuel cell for providing power, the method comprising:
selecting a fuel supply containing fuel for the fuel cell;

bringing the fuel supply into fluid communication with the fuel chamber;
wherein the step of bringing the fuel supply into fluid communication with the
fuel chamber comprises bringing a fuel supply connector in fluid
communication with a fuel chamber connector, and
5 transferring the fuel from the fuel supply to the fuel chamber.

38. The method of claim 37 further comprising the step of monitoring the level of fuel in
the fuel chamber.

10 39. The method of claim 38 further comprising the step of stopping the transfer of fuel
when the fuel level in the fuel chamber reaches a predetermined value.

40. The method of claim 39, wherein the transfer of fuel is stopped when the fuel level
reaches about 85% to about 95% of the capacity of the fuel chamber.

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41. The method of claim 37, wherein the step of bringing the fuel supply into fluid
communication with the fuel chamber further comprises the step of providing an adapter
between the fuel supply connector and the fuel chamber connector.

20 42. The method of claim 41, wherein the adapter monitors the level of fuel in the fuel
chamber; and stops the transfer of fuel when the fuel level in the fuel chamber reaches a
predetermined value.

43. A filling system comprising:
25 a fuel supply having at least a first valve connector arranged to supply fuel to a fuel
chamber having at least a second valve connector, wherein the fuel chamber supplies fuel to a
micro gas-turbine engine, wherein the first valve connector is connectable to the second valve
connector so that the fuel supply refills the fuel chamber, and wherein when the valve
connectors are not connected to each other the first valve connector provides a seal for the fuel
30 supply and the second valve connector provides a seal for the fuel chamber.